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ABSTRACT

The purpose of this study was to examine the influence of different tasks on behavior in mother-child interactions. Five tasks, varying in degree of structure and difficulty, were used in mothers' interactions with their children at 24 and 36 months of age. Subjects were Mexican-American mothers and their children. All were participants in an extensive 2-year parent education program designed especially to meet the needs of low-income Mexican-American families. Families entered the project when the child was one year of age. Participants were randomly assigned to program or control groups and then each mother-child interaction was videotaped and rated at one minute intervals on the following scales: Affection, Praise, Criticism, Control, Reasoning, Mother's Verbal Encouragement, and Child Verbal Responsiveness. The Bayley Mental Development Index (MDI) was used to measure the children's abilities at 24 months of age and Palmer's Concept Familiarity Index (CFI) and the Stanford-Binet (S-B) were used when the children were 36 months of age. Results showed that: (1) program and control mother-child dyads differed significantly on mean scores for Affection, Criticism, Child Verbalization, and Mother's Verbal Encouragement and that with the exception of Criticism, all differences favored the program group at both time intervals: (2) while significant correlations were found between mother-child interaction variables and measures of child cognitive competence, there were no distinct differences between tasks in these relationships: and (3) for both groups, the correlates with measures of child competence were similar for high and low structure tasks while the relative stability of high and low structure tasks across time was also similar. (Author/MP)

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Effect of Task on Mother-Child Interaction Results

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Running Head: Mother-Child Interaction Tasks

Abstract

The influence of task on behavior in mother-child interaction was studied. Five tasks varying in degree of structure and difficulty were used in mothers' interactions with their children at 24 and 36 months of age. Child competence was assessed through several tests. Families that had participated in an extensive parent education program were compared with randomly assigned controls. Interactions were videotaped and rated on scales. Results indicated that there were no task differences in ability to discriminate groups and tasks seldom were found to be differentially related to child competence. Task stability over time yielded some differences.

Effect of Task on Mother-Child Interaction Results

Concern with environmental influences on child behavior has led to a rapid increase in the use of mother-child interaction (MCI) situations in research. There are two basic settings for observing these interactions, in the home or in the laboratory, and each presents technical problems that must be solved. This paper is concerned with one of these problems as it arises in laboratory studies of mother-child interaction involving preschool children. The problem is that of choice of task for the interaction to be observed. In general, the question is whether to create highly structured situations which place certain demands on the participants, e.g., "teach your child to solve this puzzle", or to leave the task unstructured and open, e.g., "play together" or "wait here". As might be expected, different researchers have handled the problem in their own different ways. Some have selected low structure tasks (Baldwin & Baldwin, 1973; Lytton, 1973) others have chosen tasks that are more structured and demanding (Hess & Shipman, 1965; Laosa, 1978, Steward & Steward, 1969) and still others have selected a combination of high and low structured tasks (Streissguth & Bee, 1972; Kogan & Wimberger; 1966).

The mother-child interaction procedure has been widely used in program evaluation (Lambie, Bond, & Weikart, 1973; Barbrack & Horton, 1970; Boger & Kuipers, 1973; Mann, 1970) as well as in exploring the MCI antecedents of various aspects of child competence (Campbell, 1973; Streissguth & Bee, 1972; Davis and Dreyer, 1973; Leler, 1971; Epstein & Evans, 1979). This does not by any means exhaust the uses to which the technique has been put. Others have used it to investigate the role of social class or ethnicity on parent-child

relations (Brophy, 1970; Hess & Shipman, 1965; Steward & Steward, 1973) or the effect of mother's mental illness on interaction with her children (Gamer, Grunebaum, Cohler & Gallant, 1977) or turning the focus the other way, the effect of the child's hyperactivity on the interaction (Humphries, Kinsbourne & Swanson, 1978).

It is quite apparent that the parent-child interaction procedure is held in high esteem by researchers of parent-child relationships. One of the strengths of the procedure is that individual differences are seen to emerge when presented with tasks in controlled environments. It is also apparent that these investigators assume that different tasks will tend to elicit different kinds of behavior. Nevertheless, no research has been devoted to the influence of the interaction task itself on behavior.

The present research was conducted to remedy this situation. The objective was to provide answers to three questions that are important in this area: 1) Will tasks differ in their ability to differentiate experimental and control groups in the evaluation of a parent education program? 2) Will the various tasks yield different information in the study of the maternal antecedents of child competence? 3) Will tasks differ in their reliability across time?

Method

Subjects. The subjects in this study were Mexican-American mothers and their children. All were participants in an extensive two-year parent education program designed especially to meet the needs of low-income Mexican American families or controls for this program.

Families entered the project when the child was one year of age. They were then ramdomly assigned to program or control groups. The project

operates continuously with about 100 families equally divided into the two groups enrolled each year.

For the present study there were 44 program and 48 control mother-child pairs. The numbers available for all measures were sometimes less as on the analysis of correlations of tasks with child test scores where there were 30 and 31 subjects. For the analyses reported here data were collected twice, at 24 months and 36 months. The number of boys and girls was approximately equal.

Procedure. The primary source of data was a mother-child interaction situation carried out at the research center in a standard playroom. The mother and her child were videotaped as they interacted in several assigned tasks. The length and nature of these tasks varied as a function of child's age. Thus, at age two, there was a Book task (4 min.), Animal Sort (4 min.). At age three, two sessions were used. The first consisted of Free Play (20 min.) and second of Book task (6 min.), Block Sort (12 min.), Block Design (6 min.) and Teaching Toys (12 min.). The tasks differed greatly in the degree of structure imposed by the Es on the mothers.

The Sorting and Design tasks were highly structrued, e.g., "teach your child to solve this problem", whereas the Free Play, Book, and Play Village tasks were relatively unstructured, e.g., "play together with your child."

Ratings were made of the videotapes at one mintue intervals on the following scales: 1) Affection, 2) Praise, 3) Criticism, 4) Control, 5) Reasoning, 6) Mother's Verbal Encouragement and 7) Child Verbal Responsiveness. Observer reliability was checked frequently and reliabilities were all above .80.

The measure of child ability at 24 months was the Bayley Mental Development Index (MDI). At 36 months, Palmer's Concept Familiarity Index

(CFI) and the Stanford-Binet (S-B) were used. All tests were administered in the child's preferred language by bilingual examiners and under optimal testing conditions.

Results

Program Evaluation. Two independent split-plot MANOVAs were performed on a set of six dependent (MCI) variables replicated across the five mother-child tasks and using treatments (program vs. controls) as the between groups factors. Data at intervals of 24 and 36 months of child age were analyzed separately. The six MCI scales investigated were Affection, Praise, Criticism, Reasoning, Verbal Encouragement and Child Verbalization.

At 24 months non-significant results were obtained on the multivariate test using Wilk's lambda criterion both for the main effect across tasks ($F=.508$; $df=24,62$; $p<.97$) and for the effect of program-task interaction ($F=1.315$; $df=24,62$; $p<.19$). Parallel results at 36 months were found for the task main effect ($F=.464$; $df=24,54$; $p<.98$). and for the program-task interaction ($F=.894$; $df=24,54$; $p< .61$).

Strong significant between groups differences were found. The overall multivariate tests revealed significant treatment effects at 24 months ($f=2.66$; $df-6,80$; $p<.02$) and at 36 months ($F=3.27$; $df =6,72$; $p<.007$). At 24 months program and control mother-child dyads differed significantly on mean scores for Affection ($F=7.29$; $df=85$; $p<.008$), Criticism ($F=10.30$; $df=1,85$; $p<.002$) and Child Verbalization ($F=6.81$; $df=1,85$; $p<.01$). At 36 months, the groups differed significantly again on Affection ($F=8.02$; $df=1,77$; $p<.006$), Criticism ($F=7.65$; $df=1,77$; $p<.007$) and Mother's Verbal Encouragement ($F=6.64$; $df=1,77$; $p<.012$). With the exception of Criticism, all differences favored the

program group at both time intervals. Controls had higher Criticism scores at 24 and 36 months.

Correlates of Child Cognitive Competence. The usefulness of various MCI tasks for the study of parental influences on child cognitive competence was explored through Pearson correlational techniques. The results appear in Tables 1 and 2. These tables show both concurrent 24 months MCI and 24 month Bayley MDI and 36 months MCI with 36 month S-B and CFI. Predictive correlations were obtained for 24 month MCI with 36 month S-B CFI and scores.

Tables 1 and 2 about here

There were 16 significant relationships for the control group at the 24 month concurrent time (See Table 1). The tasks yielded highly similar results for Criticism and Control in that none were significant and for Verbal Encouragement where all were significant. Child Verbalization was quite like Verbal Encouragement with all but the Book task significant. These patterns of similarity did not hold for the other scales.

At 36 months, the S-B was involved significantly on no tasks on Praise and Control and on all but one task on Reasoning, Verbal Encouragement and Child Verbalization. On Criticism, each task yielded negative correlations with the S-B, but only Design and Sort were significant. The CFI correlations at 36 months were similar to those for the S-B. None were significant, and in a negative direction, for Criticism and all but one were

significant for Reasoning and Verbal Encouragement. Affection and Child Verbalization yielded somewhat less consistent results.

Predictive correlations for the various tasks, again for the Control group, were consistent only in the sense that there were no significant task correlations with the CFI or S-B on Affection, Praise and Verbal Encouragement. Beyond that, the results appear quite inconsistent. There were five significant correlations each for the CFI and S-B and of these ten, four are for Free Play and four for Play Village.

The pattern of task to test correlations for the program group is quite simple, largely because there were few significant correlations. Only one appeared at the 24 month time and at 36 months there were only 11 for the CFI and S-B together (There were 36 for the Control group). None were significant for Affection, Criticism and Control. There was no obvious pattern for the other scales.

Predictive correlations were also sparse for the program group. None appeared for Affection or Verbal Encouragement and only one each for Praise, Criticism and Reasoning.

Overall, it is clear that while there are significant correlations between mother-child interaction variables and measures of child cognitive competence, there were no distinct differences between tasks in these relationships.

Longitudinal Stability. The question of the relative stability of the ratings made on various tasks was explored through Pearson correlations on ratings made at 24 months and again at 36 months. The results appear in Table 3.

Table 3 here

It was expected that the stability of ratings for the control group would be greater than for those of the program group in as much as an intervention should perturb the "natural" relationship. Examination of Table 3 reveals that this expectation was confirmed except of ratings of Criticism where the two groups were similar across tasks.

There is no clear evidence that ratings on any one of the tasks were markedly more stable than on any other. Using the presence of significant correlations as a criterion, we found that (for the control group) each task yielded significant correlations on four or five of the ratings. The Book task was an exception in that only three ratings were significant, but Control was not rated on that task. For the program group, each task had two or three significant correlations, except Book which had none.

Effect of Differences in Task Structure. The five tasks examined in the above analyses were divided into high structure (Sorting and Design) and low structure (Free Play, Book, Play Village) tasks. The same analyses were then carried out as for the five separate tasks and the results were essentially the same. Again, there were no differences between program and control group mena scores on any of the rating scales, the correlates with measure of child competence were about the same for high and low structure tasks, and the relative stability of high and low structure tasks across time were similar.

Discussion

The general objective of the research on which the present study was based was to evaluate an extensive parent education program and to do this through the observations in the home, the many strong disadvantages of this procedure led to the use of a laboratory format. This decision invited the question of what tasks to use and because there was little research evidence about the relative merits of one type of task over another, we chose the conservative, but expensive, approach of using five different tasks.

The results of the present study have shown that a more economical, briefer, approach would have done as well. For the purposes of program evaluation, the five tasks appear to be equally productive. The results of the study of mother-child interaction correlates of child cognitive competence and longitudinal stability were less clearcut, but no strong task differences appeared.

Other studies of mother-child interaction have found greater task differences, but they were unlike the present study in important ways. For example, Streissguth and Bee (1972), in comparing responses to free play and structured tasks found differences that were dependent on the mother's level of education. Mothers with more education used more positive reinforcement and praise on "teaching" tasks. The two groups of mothers did not differ on the free play task. Cunningham and Barkley (1979) did not report group-by-task effects, but in their work with hyperactive and normal children, both groups had higher rates of interaction on the structured task. The relative relationship between the two groups on two tasks was about the same. For example, on "mother commands" the frequencies were 10.2 for normals and 21.5 for hyperactives on free play and the same variable yielded frequencies of 21.3 for normals and 40.8 for hyperactives on the structured task.

Certainly, generalization from the results of the present research is limited by a number of subject and procedural characteristics. There were three technical problems. First, mothers and children typically interacted in the same sequence and at one time period. This made it possible, even likely, that they would adopt a certain interactional set and maintain it through the series of interactions, thus, minimizing task differences. There was one important exception to this procedure: at age 3, Free Play was carried out separately from the other tasks. The continuity and set issue would not have arisen. Nevertheless, Free play at that time did not differ remarkably from the other tasks.

Secondly, the raters also made ratings across tasks in a single time period. Thus, they too, might have been subject to a rating response set. Informal observations of the MCI and of the raters suggested that neither of these limitations had much influence on the results.

A third consideration is that only one type of behavior classification was carried out. Results for rating scales may be different from results obtained by coding specific behaviors or types of interactions. This is an open question and can only be answered by other research. It should be remembered that the rating scales used here did distinguish program and control groups.

Finally, what is ironically perhaps the most important limitation of all arises from the attention given to initial task selections. In choosing tasks for the PCDC program evaluation, care was taken to make sure that they were attractive to both mother and child and appropriate to the child's developmental level. That we were successful in this is seen in the results of ratings of mother and child interest in the situation. These ratings were uniformly high for all tasks. The tasks were attractive and apparently equally productive. Task influences may be greater under other circumstances.

Table 1
Child Test Correlates of Mother-Child Interaction Ratings By Task

Control Group N=31-32

	Affection					Praise					Criticism					Control				
Time/Measure	B	F	D	S	PV	B	F	D	S	P	B	F	D	S	P	B	F	D	S	P
24-24 MDI	07	33	13	02	40	03	34	22	18	44	-08	-09	00	-17	-03	-	-23	-05	-20	01
24-36																				
CFI	02	-03	-07	-03	04	-20	-21	-02	-06	-03	-11	-52	-19	-25	-33	-	-05	-34	-29	-04
S-B	-06	14	-02	-03	17	04	-08	07	-05	05	-15	-40	-16	-21	-24	-	-06	-16	-12	07
S-B																				
36-36																				
CFI	12	29	43	31	35	10	-18	31	26	23	-30	-57	-59	-56	-45	-	02	-15	-14	05
S-B	-12	18	36	35	26	15	06	29	14	17	-25	-21	-40	-55	-24	-	04	00	-01	15

	Reasoning					Verbal Encouragement					Child Verbalization				
24-24	B	F	D	S	P	B	F	D	S	P	B	F	D	S	P
MDI	05	37	33	18	42	47	55	39	41	44	27	42	43	41	52
24-36															
CFI	-18	12	09	44	31	09	04	08	02	19	-11	09	03	17	21
S-B	-01	58	30	22	52	03	24	18	08	15	20	47	14	24	38
36-36															
CFI	57	33	29	33	39	33	17	42	50	48	15	15	40	48	33
S-B	54	22	49	38	53	31	38	24	35	41	09	38	35	41	33

Significant Correlations are underlined (Note: x=control not ranked here)

Key
B=Book
FP=Free Play
D=Design
S=Sorting
PV=Play Village
MDI=Mental Development Index
SB=Stanford-Binet
CFI=Concept Familiaritu Index

Table 2

Child Test Correlates of Mother-Child Interaction Ratings by Task

Program Group N=30

	Affection					Praise					Criticism					Control				
Time/Measure	B	FP	D	S	P	B	F	D	S	P	B	F	D	S	P	B	F	D	S	P
24-24																				
MDI	-23	00	-28	-41	-12	12	02	-09	-15	09	-09	07	-02	-01	-09	-	-18	-08	02	-13
24-33																				
CFI	-13	-12	01	03	-10	-26	-26	-12	-20	-33	-14	-07	-26	-29	-02	-	-08	-30	-38	-30
S-B	-24	-08	-28	-24	-17	06	-11	12	-08	02	-18	02	15	08	32	-	-15	07	-06	-03
36-36																				
CFI	18	02	-24	-19	-01	-03	-42	29	11	15	08	-26	-16	07	23	-	00	-06	05	-18
S-B	-16	12	05	-11	-01	-05	-01	45	36	-05	00	14	-19	-25	14	-	02	-00	02	-03

	Reasoning					Verbal Encouragement						Child Verbalization			
24-24															
MDI	-10	-04	-05	05	-13	2[illegible]	27	19	02	15	25	22	19	06	24
24-36															
CFI	11	07	25	-11	04	-16	-05	-17	-06	-19	-01	05	33	15	16
S-B	25	37	-07	07	24	18	27	09	14	22	31	40	15	35	29
36-36															
CFI	17	19	-15	32	29	45	04	40	26	45	25	00	48	31	52
S-B	12	01	-25	02	24	20	12	00	-04	10	10	31	12	06	12

Significant Correlations are underlined (Note: x=control not rated here)

Key
B=Book
FP=Free Play
D=Design
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MDI=Mental Development Index
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Table 3

The Stability of Mother and child Ratings
for Five Tasks from 24 to 36 Months of Age

Tasks	Rating Scales Aff	Pra	Cri	Con	Rea	VE	CV
Control Group							
Book	45	46	08	-	13	30	37
Free Play	39	27	56	44	21	39	35
Design	43	42	46	-11	17	34	50
Sorting	48	08	54	30	20	13	29
Play Village	42	13	76	50	71	26	18
	N=62						
	r=.25,p <05; .33,p <.01						
Program Group							
Book	07	-09	05	-	-05	-04	-14
Free Play	55	51	43	00	-13	19	08
Design	22	07	49	24	35	27	33
Sorting	26	12	46	48	-17	08	14
Play Village	48	-21	35	21	19	-02	-02
	N=45						
	r=.29,p <.05; .38;p <.01						

Key

Aff=Affectionateness
Pra=Praise
Cri=Criticism
Con=Control
Rea=Reasoning
VE=Verbal Encouragement
CV=Child Verbalization

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